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10/591,930	09/07/2006	Michael Vernon Spencer	63669A	4599
109 7590 07/08/2008 The Dow Chemical Company Intellectual Property Section P.O. Box 1967 Midland, MI 48641-1967				
EXAMINER NIEBAUER, RONALD T				
ART UNIT 1654		PAPER NUMBER		
MAIL DATE 07/08/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/591,930

Applicant(s)

SPENCER, MICHAEL VERNON

Examiner

RONALD T. NIEBAUER

Art Unit

1654

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 8 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-8, 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Applicants amendments and arguments filed 5/9/08 are acknowledged and have been fully considered. Any rejection and/or objection not specifically addressed is herein withdrawn.

Claims 6,9-16 have been cancelled. Claims 17-20 have been added.

Claims 1-5,7,8,17-20 are under consideration.

Claim Objections

This objection warning is necessitated by applicants addition of claim 20.

Applicant is advised that should claim 7 be found allowable, claim 20 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). In the instant case, claims 7 and 20 use identical language and depend from the same claim. As such, claims 7 and 20 cover the same scope.

Claim Rejections - 35 USC § 103

Since the claims have been amended and new claims added, a new rejection adapted to the claims is recited above using the same references as in the previous rejection.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5,7,8,17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331).

Schulz (US 6,261,218) teach a process for making a cellulose ether (abstract). In particular, ethylcellulose (column 6 line 38) is a cellulose ether of the invention. Schulz teach depolymerization of the cellulose ether specifically via the gaseous acid hydrogen chloride (claim 9) as recited in claims 1,3,18 of the current invention. Schulz teach the process in the presence of water, specifically at least 0.5 weight percent and no more than 5.0 weight percent (claims 2,4) as recited in claims 4,19 of the current invention. Schulz teach that a low molecular weight cellulose ether is formed such that a two percent aqueous solution has a viscosity preferably about 1 to about 100 cP at 20C (1cP = 1mPa*s) (column 4 line 32-37). Schulz teach the process including etherification of the alkali cellulose and depolymerization (abstract). Specifically, Schulz teach an etherification reaction with ethyl chloride (column 3 lines 44-50) and depolymerization with gaseous hydrogen halide (column 4 lines 51-57) as recited in claim 8 of the current invention.

Schulz does not expressly teach the ethoxyl content or viscosity of the starting material of claim 1 and 8; the packaging step as in claims 1,8c; the HCl weight percent as in claim 5; or the presence of an organic solvent with the ethyl chloride as in claim 8.

It would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. ethoxyl content, viscosity, HCl weight percent), because such conditions are art-recognized result-effective variables that are routinely determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2145.05). In the instant case, claims 2,7,17,20 recite ranges of ethoxyl content and viscosity.

In the instant case, the prior art teaches related processes within the range of the instant invention.

Keary (US 6,294,008) teach cellulose ether compositions having low molecular weight and processes of making (abstract). Keary specifically teach the depolymerization of cellulose ether (column 1 line 61-65, claim 10) such that the viscosity is 200 cP or less by using hydrogen chloride. Keary specifically teach that the hydrogen chloride be present at 0.10 to about 0.19 weight percent (claim 20). Therefore Keary teach a similar process with specific hydrogen chloride ranges as in claim 5 of the instant invention.

It is noted that Keary (column 2 line 44-47) and Schulz (column 2 line 22-24) test viscosity of 2% solution which is different than the conditions of the composition of the claimed invention (a 5% solution). Please note, since the Office does not have the facilities for examining and comparing Applicants' composition with the composition of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the product of the prior art. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re*

Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980), and “as a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith.” *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). Pyle goes on to describe an ethylcellulose having an ethoxyl content preferably between about 43% and about 48% and a viscosity of at least 20cps (column 4 lines 24-27). In example 1, Pyle teach ethylcellulose having 46.5% ethoxyl content dissolved in a toluene-alcohol organic solvent which has a viscosity of 97 cps. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the current invention as well as the presence of organic solvents as in claim 8a of the current invention.

Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49). Savage teach the addition of hydrogen peroxide followed by packaging (column 3 line 66-68) with no intermediate neutralization step. Since Schulz (discussed above) teach a related process for reducing viscosity one would be motivated to combine with the teachings of Savage. In particular, one would be motivated to optimize the process to reduce the cost of the process by reducing the number of steps and materials needed. As such one would package the ethylcellulose without a neutralization step as

described by Savage thus meeting the limitations of claims 1,8 of the instant invention. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

It has been recently held that "Neither §103's enactment nor *Graham's* analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art." KSR v. Teleflex, 550 U.S. ___, 82 USPQ2d 1385, 1389 (2007). The KSR court stated that "a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." KSR at 1389. In the instant case, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods and the combination would have yielded predictable results.

Furthermore, The KSR court concluded that "obvious to try" may be an appropriate test under 103. The Supreme Court stated in *KSR*

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"to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, ___, 82 USPQ2d 1385, 1397 (2007).

In the instant case all the claimed elements (ethylcellulose and packaging of ethylcellulose) were known in the art as discussed above and one skilled in the art could have combined the elements by known methods and the combination would have yielded predictable results. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Section 2111.04 of the MPEP states:

Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although not exhaustive, that may raise a question as to the limiting effect of the language in a claim are:

(A) “adapted to ” or “adapted for ” clauses;

(B) “ wherein ” clauses; and

(C) “ whereby ” clauses.

The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case.

In the instant case, claims 2 and 7 recite wherein clauses about the product produced. It is noted that claim 7 also recites limitations about the starting material, however the range of viscosities is within the ranges cited above. Since the wherein clause does not result in an additional step or require steps to be performed the claim limitations are met from the above cited references.

Response to Arguments 103 rejection

Since the claims have been amended and new claims added, a new rejection adapted to the claims is recited above using the same references as in the previous rejection. Applicants arguments will be considered to the extent that they apply to the current rejection and claim set.

Applicants argue that a surprising finding is reflected in the instant claims related to the stability of the depolymerized cellulose ether. Applicants argue that Schulz, Keary, and Pyle teach away from the instant invention regarding the neutralization step. Applicants argue that Savage is limited to treatment with hydrogen peroxide and there can be no neutralization with Savage. Applicants argue that Savage and the other references all teach deactivation steps.

Applicant's arguments filed 5/9/08 have been fully considered but they are not persuasive.

Although applicants assert a surprising finding, the assertion is not based on a comparison with the prior art (compare MPEP section 716.02(b) III). In the instant case, no comparisons are made, for example to the stability of depolymerized ethylcellulose with a neutralization step. As such, the applicant has not met the burden of showing that the results are unexpected and significant.

Although applicants argue that certain references teach certain steps such as neutralization, it is noted that the instant rejection (and rejection set forth in the previous office action) is a multiple reference 103 rejections. As such, no single reference teaches all of the claimed limitations. In the instant case, the Savage reference is relied upon for the teaching of packaging without a neutralization step.

Savage teach that a pH of 8-11 (column 3 lines 21-25) can be used. Thus, there can be neutralization, contrary to applicants arguments. Further, although applicants argue about the heating/deactivation steps in Savage, it is noted that the instant claims are drawn to neutralization. Heating or deactivating are not necessarily the equivalent of neutralizing. It is noted that no special definition or direction is provided in the instant application regarding the use of the term 'neutralization step'. Even if one considered the heating step of Savage to be the equivalent to a 'neutralization step', Savage specifically teaches that the final product with its viscosity adjusted as required for a particular application can be used or packaged without further treatment (column 3 lines 66-68). Although Savage discuss heating steps (column 3 lines 53-57) such steps are not mandatory. As stated in section 2123 II of the MPEP, alternative embodiments

do not constitute a teaching away. In fact, in run 2-2 (Table 2 column 4) and run 3-2 (Table 3 column 4) Savage teach runs in which there was no heating. In other words, the heating step is an optional step. One would be motivated to package the depolymerized ethylcellulose without neutralization steps for applications in which fewer steps are desired (to reduce costs, or for immediate use for example).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5,7,8,17-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,306,333 (‘333) in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331).

'333 teach a process for making cellulose specifically a low molecular weight cellulose ether comprising providing a cellulose ether of 200 cP or more in a two percent aqueous solution and contacting the cellulose ether with an acid to depolymerize to cellulose (claim 1).

'333 does not expressly teach ethylcellulose, hydrogen chloride, etherifying, or specific ethoxyl contents.

One would have been motivated to combine '333 with the work of Schulz since both teach the making of cellulose ethers. Schulz (US 6,261,218) teach a process for making a cellulose ether (abstract). In particular, ethylcellulose (column 6 line 38) is a cellulose ether of the invention. Schulz teach depolymerization of the cellulose ether specifically via the gaseous acid hydrogen chloride (claim 9) as recited in claims 1,3,18 of the current invention. Schulz teach the process in the presence of water, specifically at least 0.5 weight percent and no more than 5.0 weight percent (claims 2,4) as recited in claims 4,19 of the current invention. Schulz teach that a low molecular weight cellulose ether is formed such that a two percent aqueous solution has a viscosity preferably about 1 to about 100 cP at 20°C (1cP = 1mPa•s) (column 4 line 32-37). Schulz teach the process including etherification of the alkalinized cellulose and depolymerization (abstract). Specifically, Schulz teach an etherification reaction with ethyl chloride (column 3 lines 44-50) and depolymerization with gaseous hydrogen halide (column 4 lines 51-57) as recited in claim 8 of the current invention.

Schulz does not expressly teach the ethoxyl content or viscosity of the starting material of claim 1 and 8; the packaging step as in claims 1,8c; the HCl weight percent as in claim 5; or the presence of an organic solvent with the ethyl chloride as in claim 8.

It would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. ethoxyl content, viscosity, HCl weight percent), because such conditions are art-recognized result-effective variables that are routinely determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2145.05). In the instant case, claims 2,7,17,20 recite ranges of ethoxyl content and viscosity.

In the instant case, the prior art teaches related processes within the range of the instant invention.

Keary (US 6,294,008) teach cellulose ether compositions having low molecular weight and processes of making (abstract). Keary specifically teach the depolymerization of cellulose ether (column 1 line 61-65, claim 10) such that the viscosity is 200 cP or less by using hydrogen chloride. Keary specifically teach that the hydrogen chloride be present at 0.10 to about 0.19 weight percent (claim 20). Therefore Keary teach a similar process with specific hydrogen chloride ranges as in claim 5 of the instant invention.

It is noted that Keary (column 2 line 44-47) and Schulz (column 2 line 22-24) test viscosity of 2% solution which is different than the conditions of the composition of the claimed invention (a 5% solution). Please note, since the Office does not have the facilities for examining and comparing Applicants' composition with the composition of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the product of the prior art. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re*

Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980), and “as a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith.” *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). Pyle goes on to describe an ethylcellulose having an ethoxyl content preferably between about 43% and about 48% and a viscosity of at least 20cps (column 4 lines 24-27). In example 1, Pyle teach ethylcellulose having 46.5% ethoxyl content dissolved in a toluene-alcohol organic solvent which has a viscosity of 97 cps. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the current invention as well as the presence of organic solvents as in claim 8a of the current invention.

Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49). Savage teach the addition of hydrogen peroxide followed by packaging (column 3 line 66-68) with no intermediate neutralization step. Since Schulz (discussed above) teach a related process for reducing viscosity one would be motivated to combine with the teachings of Savage. In particular, one would be motivated to optimize the process to reduce the cost of the process by reducing the number of steps and materials needed. As such one would package the ethylcellulose without a neutralization step as described by Savage thus meeting the limitations of claims 1,8 of the instant invention. From the

teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

It has been recently held that “Neither §103's enactment nor *Graham's* analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art.” *KSR v. Teleflex*, 550 U.S. ___, 82 USPQ2d 1385, 1389 (2007). The KSR court stated that “a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” KSR at 1389. In the instant case, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods and the combination would have yielded predictable results.

Furthermore, The KSR court concluded that “obvious to try” may be an appropriate test under 103. The Supreme Court stated in *KSR*

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“to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.” *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, ___, 82 USPQ2d 1385, 1397 (2007).

In the instant case all the claimed elements (ethylcellulose and packaging of ethylcellulose) were known in the art as discussed above and one skilled in the art could have combined the elements by known methods and the combination would have yielded predictable results. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Section 2111.04 of the MPEP states:

Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although not exhaustive, that may raise a question as to the limiting effect of the language in a claim are:

(A) "adapted to" or "adapted for" clauses;

(B) "wherein" clauses; and

(C) "whereby" clauses.

The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case.

In the instant case, claims 2 and 7 recite wherein clauses about the product produced. It is noted that claim 7 also recites limitations about the starting material, however the range of viscosities is within the ranges cited above. Since the wherein clause does not result in an additional step or require steps to be performed the claim limitations are met from the above cited references.

Claims 1-5,7,8,17-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,261,218 ('218) in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331).

'218 teach a process of depolymerizing a high molecular weight cellulose ether comprising contacting with a gaseous acid (claim 1). '218 teach a water content of at least 0.5 weight percent (claim 2). '218 teach hydrogen chloride as the acid (claim 7).

'218 does not expressly teach the ethoxyl content and viscosity of the starting material of claim 1, packaging as in claim 6, HCl weight percent as in claim 5, or the presence of an organic solvent with the ethyl chloride as in claim 8.

One would have been motivated to combine '218 with the work of Schulz since both teach the making of cellulose ethers. Schulz (US 6,261,218) teach a process for making a cellulose ether (abstract). In particular, ethylcellulose (column 6 line 38) is a cellulose ether of the invention. Schulz teach depolymerization of the cellulose ether specifically via the gaseous acid hydrogen chloride (claim 9) as recited in claims 1,3,18 of the current invention. Schulz teach the process in the presence of water, specifically at least 0.5 weight percent and no more than 5.0 weight percent (claims 2,4) as recited in claims 4,19 of the current invention. Schulz teach that a low molecular weight cellulose ether is formed such that a two percent aqueous solution has a viscosity preferably about 1 to about 100 cP at 20C (1cP = 1mPa*s) (column 4 line 32-37). Schulz teach the process including etherification of the alkalized cellulose and depolymerization (abstract). Specifically, Schulz teach an etherification reaction with ethyl chloride (column 3 lines 44-50) and depolymerization with gaseous hydrogen halide (column 4 lines 51-57) as recited in claim 8 of the current invention.

Schulz does not expressly teach the ethoxyl content or viscosity of the starting material of claim 1 and 8; the packaging step as in claims 1,8c; the HCl weight percent as in claim 5; or the presence of an organic solvent with the ethyl chloride as in claim 8.

It would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. ethoxyl content, viscosity, HCl weight percent), because such conditions are art-recognized result-effective variables that are routinely

determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2145.05). In the instant case, claims 2,7,17,20 recite ranges of ethoxyl content and viscosity.

In the instant case, the prior art teaches related processes within the range of the instant invention.

Keary (US 6,294,008) teach cellulose ether compositions having low molecular weight and processes of making (abstract). Keary specifically teach the depolymerization of cellulose ether (column 1 line 61-65, claim 10) such that the viscosity is 200 cP or less by using hydrogen chloride. Keary specifically teach that the hydrogen chloride be present at 0.10 to about 0.19 weight percent (claim 20). Therefore Keary teach a similar process with specific hydrogen chloride ranges as in claim 5 of the instant invention.

It is noted that Keary (column 2 line 44-47) and Schulz (column 2 line 22-24) test viscosity of 2% solution which is different than the conditions of the composition of the claimed invention (a 5% solution). Please note, since the Office does not have the facilities for examining and comparing Applicants' composition with the composition of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the product of the prior art. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980), and "as a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then

obtain prior art products and make physical comparisons therewith.” *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). Pyle goes on to describe an ethylcellulose having an ethoxyl content preferably between about 43% and about 48% and a viscosity of at least 20cps (column 4 lines 24-27). In example 1, Pyle teach ethylcellulose having 46.5% ethoxyl content dissolved in a toluene-alcohol organic solvent which has a viscosity of 97 cps. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the current invention as well as the presence of organic solvents as in claim 8a of the current invention.

Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49). Savage teach the addition of hydrogen peroxide followed by packaging (column 3 line 66-68) with no intermediate neutralization step.

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Since Schulz (discussed above) teach a related process for reducing viscosity one would be motivated to combine with the teachings of Savage. In particular, one would be motivated to optimize the process to reduce the cost of the process by reducing the number of steps and materials needed. As such one would package the ethylcellulose without a neutralization step as described by Savage thus meeting the limitations of claims 1,8 of the instant invention. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

It has been recently held that “Neither §103’s enactment nor *Graham’s* analysis disturbed the Court’s earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art.” *KSR v. Teleflex*, 550 U.S. ___, 82 USPQ2d 1385, 1389 (2007). The KSR court stated that “a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” KSR at 1389. In the instant case, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods and the combination would have yielded predictable results.

Furthermore, The KSR court concluded that “obvious to try” may be an appropriate test under 103. The Supreme Court stated in *KSR*

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“to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, ___, 82 USPQ2d 1385, 1397 (2007).

In the instant case all the claimed elements (ethylcellulose and packaging of ethylcellulose) were known in the art as discussed above and one skilled in the art could have combined the elements by known methods and the combination would have yielded predictable results. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Section 2111.04 of the MPEP states:

Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although not exhaustive, that may raise a question as to the limiting effect of the language in a claim are:

- (A) “adapted to” or “adapted for” clauses;
- (B) “wherein” clauses; and
- (C) “whereby” clauses.

The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case.

In the instant case, claims 2 and 7 recite wherein clauses about the product produced. It is noted that claim 7 also recites limitations about the starting material, however the range of viscosities is within the ranges cited above. Since the wherein clause does not result in an additional step or require steps to be performed the claim limitations are met from the above cited references.

Claims 1-5,7,8,17-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-20 of U.S. Patent No. 6,294,008 ('008) in view of

Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331).

'008 teach a process for making a cellulose ether composition comprising etherifying and depolymerizing with hydrogen chloride (claim 10). '008 specifically teach hydrogen chloride at 0.10 to about 0.19 weight percent.

'008 does not expressly teach the ethoxyl content and viscosity of the starting material of claim 1, packaging as in claim 6, HCl weight percent as in claim 5, or the presence of an organic solvent with the ethyl chloride as in claim 8.

One would have been motivated to combine '008 with the work of Schulz since both teach the making of cellulose ethers. Schulz (US 6,261,218) teach a process for making a cellulose ether (abstract). In particular, ethylcellulose (column 6 line 38) is a cellulose ether of the invention. Schulz teach depolymerization of the cellulose ether specifically via the gaseous acid hydrogen chloride (claim 9) as recited in claims 1,3,18 of the current invention. Schulz teach the process in the presence of water, specifically at least 0.5 weight percent and no more than 5.0 weight percent (claims 2,4) as recited in claims 4,19 of the current invention. Schulz teach that a low molecular weight cellulose ether is formed such that a two percent aqueous solution has a viscosity preferably about 1 to about 100 cP at 20°C (1cP = 1mPa•s) (column 4 line 32-37). Schulz teach the process including etherification of the alkalized cellulose and depolymerization (abstract). Specifically, Schulz teach an etherification reaction with ethyl chloride (column 3 lines 44-50) and depolymerization with gaseous hydrogen halide (column 4 lines 51-57) as recited in claim 8 of the current invention.

Schulz does not expressly teach the ethoxyl content or viscosity of the starting material of claim 1 and 8; the packaging step as in claims 1,8c; the HCl weight percent as in claim 5; or the presence of an organic solvent with the ethyl chloride as in claim 8.

It would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. ethoxyl content, viscosity, HCl weight percent), because such conditions are art-recognized result-effective variables that are routinely determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP § 2145.05). In the instant case, claims 2,7,17,20 recite ranges of ethoxyl content and viscosity.

In the instant case, the prior art teaches related processes within the range of the instant invention.

Keary (US 6,294,008) teach cellulose ether compositions having low molecular weight and processes of making (abstract). Keary specifically teach the depolymerization of cellulose ether (column 1 line 61-65, claim 10) such that the viscosity is 200 cP or less by using hydrogen chloride. Keary specifically teach that the hydrogen chloride be present at 0.10 to about 0.19 weight percent (claim 20). Therefore Keary teach a similar process with specific hydrogen chloride ranges as in claim 5 of the instant invention.

It is noted that Keary (column 2 line 44-47) and Schulz (column 2 line 22-24) test viscosity of 2% solution which is different than the conditions of the composition of the claimed invention (a 5% solution). Please note, since the Office does not have the facilities for examining

and comparing Applicants' composition with the composition of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the product of the prior art. *See In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980), and "as a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). Pyle goes on to describe an ethylcellulose having an ethoxyl content preferably between about 43% and about 48% and a viscosity of at least 20cps (column 4 lines 24-27). In example 1, Pyle teach ethylcellulose having 46.5% ethoxyl content dissolved in a toluene-alcohol organic solvent which has a viscosity of 97 cps. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the current invention as well as the presence of organic solvents as in claim 8a of the current invention.

Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49). Savage teach the addition of hydrogen peroxide followed by packaging (column 3 line 66-68) with no intermediate neutralization step. Since Schulz (discussed above) teach a related process for reducing viscosity one would be motivated to combine with the teachings of Savage. In particular, one would be motivated to

optimize the process to reduce the cost of the process by reducing the number of steps and materials needed. As such one would package the ethylcellulose without a neutralization step as described by Savage thus meeting the limitations of claims 1,8 of the instant invention. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

It has been recently held that "Neither §103's enactment nor *Graham's* analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art." KSR v. Teleflex, 550 U.S. ___, 82 USPQ2d 1385, 1389 (2007). The KSR court stated that "a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." KSR at 1389. In the instant case, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods and the combination would have yielded predictable results.

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In the instant case all the claimed elements (ethylcellulose and packaging of ethylcellulose) were known in the art as discussed above and one skilled in the art could have combined the elements by known methods and the combination would have yielded predictable

results. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Section 2111.04 of the MPEP states:

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The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case.

In the instant case, claims 2 and 7 recite wherein clauses about the product produced. It is noted that claim 7 also recites limitations about the starting material, however the range of viscosities is within the ranges cited above. Since the wherein clause does not result in an additional step or require steps to be performed the claim limitations are met from the above cited references.

Claims 1-5,7,8,17-20 are directed to an invention not patentably distinct from the claims of commonly assigned U.S. Patent No. 6,306,333; U.S. Patent No. 6,261,218; U.S. Patent No. 6,294,008 as discussed above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned U.S. Patent No. 6,306,333; U.S. Patent No. 6,261,218; U.S. Patent No. 6,294,008, discussed above, would form the basis for a rejection of the noted claims under 35

U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Response to Arguments Double Patenting

Since the claims have been amended, a new rejection adapted to the claims is recited above using the same references as in the previous rejection. Applicants arguments will be considered to the extent that they apply to the current rejection and claim set.

Applicants argue that for similar reasons used in the 103 rejection argument that the double patenting rejection should not be applied since they all teach neutralization.

Applicant's arguments filed 5/9/08 have been fully considered but they are not persuasive.

As discussed above, although applicants argue that certain references teach certain steps such as neutralization, it is noted that the instant rejection (and rejection set forth in the previous office action) is a multiple reference 103 rejections. As such, no single reference teaches all of

the claimed limitations. In the instant case, the Savage reference is relied upon for the teaching of packaging without a neutralization step.

Savage teach that a pH of 8-11 (column 3 lines 21-25) can be used. Thus, there can be neutralization, contrary to applicants arguments. Further, although applicants argue about the heating/deactivation steps in Savage, it is noted that the instant claims are drawn to neutralization. Heating or deactivating are not necessarily the equivalent of neutralizing. It is noted that no special definition or direction is provided in the instant application regarding the use of the term 'neutralization step'. Even if one considered the heating step of Savage to be the equivalent to a 'neutralization step', Savage specifically teaches that the final product with its viscosity adjusted as required for a particular application can be used or packaged without further treatment (column 3 lines 66-68). Although Savage discuss heating steps (column 3 lines 53-57) such steps are not mandatory. As stated in section 2123 II of the MPEP, alternative embodiments do not constitute a teaching away. In fact, in run 2-2 (Table 2 column 4) and run 3-2 (Table 3 column 4) Savage teach runs in which there was no heating. In other words, the heating step is an optional step. One would be motivated to package the depolymerized ethylcellulose without neutralization steps for applications in which fewer steps are desired (to reduce costs, or for immediate use for example).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD T. NIEBAUER whose telephone number is (571)270-3059. The examiner can normally be reached on Monday-Thursday, 7:30am-5:00pm, alt. Friday, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ronald T Niebauer/
Examiner, Art Unit 1654

/Anish Gupta/
Primary Examiner, Art Unit 1654